

**REMARKS**

The Examiner is thanked for the due consideration of the application.

Claims 19-22, 24-29, 31, 33 and 38-40 are pending in the application. By this amendment claim 34 has been canceled, and its subject matter has been generally incorporated into claim 1, and the amendments to claim 1 find further support at page 4, lines 19-29 of the specification. Claims 24 and 25 have been amended to improve the language in a non-narrowing fashion. Claims 38-40 are new and find support at page 4, lines 19-29 of the specification.

No new matter is believed to be added to the application by this amendment.

**Claim Objections**

Claims 24 and 25 have been objected to as containing informalities. The comments in the Official Action have been considered, and claims 24 and 25 have been amended to be free from informalities.

**Rejection Under 335 USC §112, Second Paragraph**

Claim 19 has been rejected under 335 USC §112, second paragraph as being indefinite. This rejection is respectfully traversed.

The Official Action asserts that written description does not support the limitation "control means" in order to

invoke 35 USC §112, sixth paragraph. However, claim 19 has been amended to recite this limitation as a "controller", which does not invoke 35 USC §112, sixth paragraph.

Claim 19 is thus set forth in language that is clear, definite and has full antecedent basis.

This rejection is believed to be overcome, and withdrawal thereof is respectfully requested.

**Rejections Based on PORTER**

Claims 19-22, 24, 25 and 34 have been rejected under 35 USC §103(a) as being unpatentable over PORTER in view of GRIEGO et al. and KOLLN. Claims 26-29 and 31 have been rejected under 35 USC §103(a) as being unpatentable over PORTER in view of GRIEGO et al. and KOLLN, and further in view of BALBIERZ et al. Claim 33 has been rejected under 35 USC §103(a) as being unpatentable over PORTER in view of GRIEGO et al. and KOLLN, and further in view of ULDALL.

These rejections are respectfully traversed.

The present invention pertains to an infusion system that is illustrated, by way of example, in Figure 1 of the application, which is reproduced below.

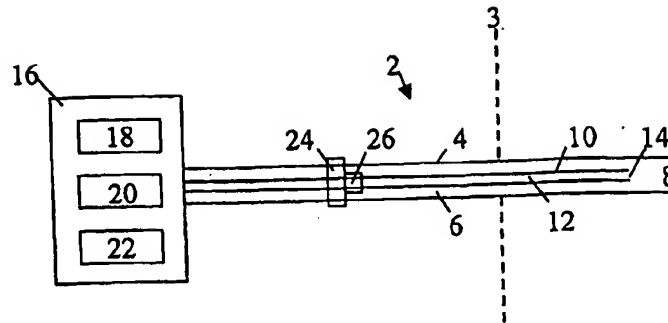


Fig. 1

Figure 1 shows a catheter 2 having an outer lumen 6 and an inner lumen 12. An external pump 16 includes a pumping means 16, a reservoir means 20 and a control means 22. The control means 22 controls the pumping means 16 such that a liquid substance is administered to a patient, where the liquid substance is followed in time by a flushing liquid sequence.

Instant claim 19 of the present invention sets forth: *"the volume of the liquid pulse of the substance is approximately the same as a volume defined in said outer catheter lumen between the inner catheter outflow opening and the outer catheter outflow opening, and a volume of the flushing liquid is equal to or slightly larger than the volume defined in said outer catheter lumen."*

The advantages of the present invention, such as set forth in instant claim 19, is discussed at page 4, lines 19-29 of the specification, which states:

"Thus, when the inner catheter is fixated to the outer catheter the distance between the two catheters' outflow openings are known. Since the catheter dimensions and the distance are known, the minimal volume required to flush the active substance from the inner catheter outflow opening and into target area can be calculated. The flushing volume must, however, be chosen slightly larger because of the laminar flow. This information is a requirement in order to program a flushing sequence after each active substance pulse volume and to preclude that each pulsed volume of an active substance in a pulsating sequence is effectively washed out. Therefore, the dual-catheter using a pair design creates a prerequisite for effective administration of pulsating sequences for liquids."

See also: new claims 38-40.

PORTER pertains to liquid embolic composition delivery devices. The Official Action refers to Figures 1 and 1A-1D of PORTER. Figure 1 of PORTER is reproduced below.

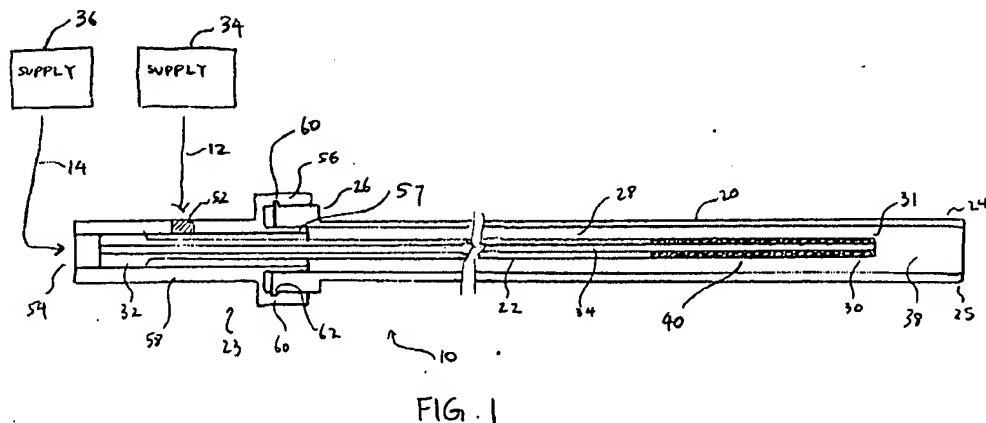


Figure 1 of PORTER shows a catheter device with an outer tubular element 20 and an inner tubular element 22. However, PORTER fails to disclose or infer the volume relationships set forth in claim 19 of the present invention.

In the last paragraph at page 8 the Official Action asserts that paragraph 0061 sets forth the volume relationship of claim 34 of the present invention (which is now incorporated into claim 1). Paragraph 0061 of PORTER discussed filling a lumen 28 of the mixing zone 38. However, there is no teaching or inference in PORTER or any of the applied art references of the volume relationships of claim 19 of the present invention, which recites:

1) *"the volume of the liquid pulse of the substance is approximately the same as a volume defined in said outer catheter lumen between the inner catheter outflow opening and the outer catheter outflow opening,"* and

2) *"a volume of the flushing liquid is equal to or slightly larger than the volume defined in said outer catheter lumen."*

The other applied art references of GRIEGO et al., KOLLN, BALBIERZ et al. and ULDALL fail to address the deficiencies of PORTER. Also, the disadvantages of ULDALL, GRIEGO et al. BALBIERZ et al. and PORTER have been discussed in the previous response, which for brevity are not repeated here.

One of ordinary skill and creativity would thus fail to produce a claimed embodiment of the present invention from a

knowledge of the applied art references. A *prima facie* case of unpatentability has thus not been made.

These rejections are believed to be overcome, and withdrawal thereof is respectfully requested.

**Conclusion**

Prior art of record but not utilized is believed to be non-pertinent to the instant claims.

The objections and rejections are believed to have been overcome, obviated or rendered moot, and no issues remain. The Examiner is accordingly respectfully requested to place the application in condition for allowance and to issue a Notice of Allowability.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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